

1. (Canceled) A process for making Nitinol rolling bearing elements of a desired shape, comprising:

making a ceramic mold having a cavity with an internal shape like said desired shape of said rolling bearing elements;

pouring molten Nitinol into said cavity;

cooling said mold and said Nitinol in said cavity to produce a solidified Nitinol form; and disintegrating said mold to remove said Nitinol form .

2. (Canceled) A process as defined in claim 1, further comprising:

after removal of said Nitinol form from said mold, subjecting said Nitinol form to hot isostatic pressing at about 1650°F and 20,000 psi for about 2 hours.

3. (Canceled) A process as defined in claim 1, wherein said rolling bearing element is a cylindrical roller bearing roller and said Nitinol form is a rod, and further comprising:

centerless grinding said rod to the desired maximum diameter of said roller elements; and;

cutting said rod to individual rollers about the length of said roller bearing elements.

4. (Canceled) A process as defined in claim 3, further comprising:

centerless grinding said individual rollers to the desired diameter and profile of said roller elements.

5. (Canceled) A process for making Nitinol ball bearing elements, comprising:

making a ceramic mold having elongated branches with spherical ball cavities therein;

pouring molten Type 60 Nitinol into said mold and allowing said molten Nitinol to flow into and fill said spherical ball cavities;

cooling said mold and said Nitinol in said mold to produce a solidified branch of connected Nitinol balls;

breaking said mold away from said Nitinol balls; and

separating said balls from said branch.

6. (Canceled) A process for making Nitinol ball bearing elements as defined in claim 5, further comprising:

after removal of said Nitinol branch of connected balls from said mold, subjecting said Nitinol branch of connected balls to hot isostatic pressing at about 1650°F and 20,000 psi for about 2 hours.

7. (Canceled) A process for making Nitinol ball bearing elements as defined in claim 5, further comprising:

grinding said balls to smooth spheres of the desired diameter.

8. (Canceled) A process as defined in claim 5, further comprising:

heating said balls to about 950°C and liquid quenching to harden said balls to about 62RC and produce a hard integral oxide surface on said balls.

9. (Currently Amended) A ~~Nitinol ball bearing element for use in a ball bearing for~~ supporting a rotating shaft, comprising:

a multiplicity of rolling bearing elements radially positioned between said shaft and a supporting structure;

wherein said rolling bearing elements include a elements made of Type 60 Nitinol.

10. (Currently Amended) A bearing as defined in claim 9, wherein:

said rolling bearing elements include rods made of Type 60 Nitinol.

11. (Currently Amended) A process ~~as defined in claim 1 for making Nitinol rolling bearing elements of a desired shape, comprising:~~

making a ceramic mold having a cavity with an internal shape like said desired shape of said rolling bearing elements;

pouring molten Nitinol into said cavity;

cooling said mold and said Nitinol in said cavity to produce a solidified Nitinol form; and disintegrating said mold to remove said Nitinol form; further comprising:

heating said Nitinol form to an elevated temperature in a range of about 800°C-950°C, and;

rotary forging said Nitinol form at said elevated temperature to produce a hot-worked rod having a diameter slightly greater than the desired diameter of said rolling bearing elements.

12. (Currently Amended) A process for making balls out of a material such as Nitinol that is difficult or impossible to form into a ball, comprising:
selecting a sheet or plate of said material Type 60 Nitinol;
cutting ball blanks out of said sheet or plate; and
grinding said ball blanks in a ball grinder to a desired spherical shape and size.
13. (Original) A process as defined in claims 12, wherein:
said ball blanks are cubical in shape.
14. (Original) A process as defined in claim 12, wherein:
said ball blanks are cylindrical in shape.
15. (Original) A process as defined in claim 12, wherein:
said ball blanks are cut out of said sheet or plate by an industrial cutting laser.
16. (Original) A process as defined in claim 12, wherein:
said ball blanks have a center and six equal orthogonal dimensions through said center.
17. (Currently Amended) A process as defined in claim 16, further comprising:
tumbling said ball blanks in an abrasive tumbler to round off corners and edges of said ball blanks prior to grinding said ball blanks in said ball grinder.
18. (Previously Amended) A process for making Nitinol bearing races, comprising:
selecting a tube made of Type 60 Nitinol and having a central axis;
cutting bearing race blanks off said tube on a cutting plane perpendicular to said central axis; and
grinding or machining said race blanks to desired outside dimensions and interior configuration.
19. (Original) A process as defined in claim 18, further comprising:

heat treating said race blanks to about 900°C and quenching to produce hardness of above about 58RC.

20. (Currently Amended) A rolling element bearing race for supporting a rotating member ~~a rolling element bearing~~, comprising:
- a multiplicity of rolling bearing elements radially positioned between said member and a supporting structure; and
- a bearing race including an annular ring of Type 60 Nitinol free of substantial compressive prestress.
21. (New) A bearing as defined in claim 9, wherein:
said rolling bearing elements are spheres made of Type 60 Nitinol.